South Bend, Indiana

Value-added Deconstruction in South Bend, IN Generates a $1.4 Million Revenue Stream

Former Studebaker Plant 8 site, before (left) and after redevelopment.

A Construction and Demolition (C&D) Waste Reduction Success Story

Sustainable reuse of brownfields properties includes efforts to reduce the environmental impact by reusing and recycling materials generated during building construction, demolition or renovation. Recycling of C&D materials can prevent loss of useful property, wasted materials, and embodied energy. It also helps to conserve raw materials through the use of existing materials, conserves energy and water, and reduces the production of greenhouse gas emissions and other pollutants. Additionally, C&D recycling can reduce overall project costs through the sale of building materials for recycling or reuse, and through avoided disposal and transportation costs. Furthermore, by providing materials to local vendors and processors, C&D recycling can create employment and economic activity that helps sustain local economies.

Project Highlights

Redevelopment of the former 34-acre Studebaker Plant 8 in South Bend, Indiana, offers an excellent example of construction and demolition (C&D) recycling and reuse. An estimated 99 percent of the site's 665,000 square-foot building was deconstructed for reuse, generating $1.4 million that went toward the property's assessment, cleanup and redevelopment. A variety of the materials recovered during deconstruction were reused to construct the new Green Tech Recycling facility, the only large-scale recycling and transfer facility of its kind in Indiana. Other materials were sold through local, regional and national markets—including iron and steel shipped to steel mills in South Bend; brick for historical preservation projects; or donated locally including fencing used at a nearby baseball field; and wood mulched for landscaping projects. On Earth Day 2008, Green Tech opened its doors for business on the former Studebaker plant site—offering new, local recycling options for metal, brick, concrete, asphalt, computers, plastic, and other C&D materials that is creating green jobs and other economic opportunities to help sustain the South Bend economy. In October 2008, this project received the Indiana Governor's Environmental Excellence Award recognized for its achievements in the Recycling and Reuse category.

> ***"Green Tech Transfer and Recycling, LLC deserves this award for creating and implementing an innovative project that can be admired by the entire community,"*** *said Thomas Easterly, commissioner of Indiana's Department of Environmental Management.* ***"The company's contribution toward protecting Indiana's environment is a standard that we should all strive to follow."***

Deconstruction – the selective dismantling or removal of materials from buildings before or instead of some elements of demolition.

Value-added Deconstruction – diverting valuable resources from crowded landfills into profitable uses, which in turn would enable deconstruction to pay for itself by generating revenues and reducing landfill and disposal costs.

Background

The 34-acre Studebaker Plant 8 site in South Bend, Indiana, was part of the original Studebaker vehicle plant, founded in 1852 and used to manufacture automobiles until 1963. The property was used primarily for storage, but sat vacant from 1993 until 2005. In 2005, Mother Earth, LLC identified the site as a possible location for their proposed multi-million dollar recycling and transfer facility, but suspected environmental contamination and the unusable condition of two large industrial-size buildings remained as barriers to reuse.

Mother Earth decided to proceed and acquired the property in 2005. Funding from multiple public and private sources was used to identify and address the site's environmental contamination; which included the cleanup of lead-contaminated soil, and the removal and safe disposal of asbestos-contaminated paneling from the 665,000 square-foot building.

Process

Prior to actual deconstruction, a thorough audit of building materials was conducted, markets for harvested materials were identified, and an experienced deconstruction crew was retained. Upon completion of the upfront planning, the deconstruction crew harvested, sorted, and prepared building materials for recycling and reuse on site.

By electing to deconstruct, rather than demolish, the site's 665,000 square-foot building, Mother Earth recovered valuable building materials for recycling and reuse. Belinda and Mike Morris, co-owners of Mother Earth, LLC commented, "We felt that the project was about as 'green' as it gets—it was important to recycle as much as possible. We challenged ourselves to be as environmentally responsible as we could. Soon everyone was on board researching what could be done with as many materials as possible and to develop new uses for old products, instead of the traditional landfilling."

Recycling during deconstruction at the Former Studebaker Plant 8 Site.

Materials recovered from the former Studebaker Plant 8 property

- 15,000 tons of concrete and bricks – reused on site for infill projects, sold for reuse.
- 2000 tons of iron, steel and other metals – shipped to local steel mills.
- 5,000 cubic yards of wood – mulched and donated for nearby landscaping and sold for reuse.
- 15 drums of bulbs including Fluorescent lights and ballasts – removed and packaged for bulb recycling.
- 80 tons of Pea gravel – removed from the roof and used around drainage pipes.
- Signage – reused for a nearby baseball field.
- Gate – reused for a nearby baseball field handicap parking.

Building materials sorted for recycling and reuse.

Project Funding

- Mother Earth, LLC – $4 million for cleanup, deconstruction and redevelopment.
- Indiana Brownfields Program – $45,123 for environmental assessment and cleanup.
- EPA Brownfields Assessment grant funding from South Bend, Indiana – $71,693.
- Material recycling revenue through deconstruction – $1.4 million (minus $500,000 in deconstruction costs).

Results

An estimated 99 percent of the material from the 665,000 square-foot building was recovered and converted to profitable reuses that helped to fund the project, and kept valuable building material out of the landfill. The site's remaining, 85,000 square foot building is being reused for Green Tech offices, a maintenance garage, and a future green industry incubator. Green building materials in the form of recycled plastic were used as decking, signs, and simulated wood flooring. Additional green technology for the building and property include: low volatile emission interior paint, tinted windows for energy reduction, skylights and high efficiency lighting to reduce energy consumption, and an electric car for site tours. Phase I of the two-phase $3.5 million dollar project, the Green Tech Recycling facility, was completed and open for business on Earth Day 2008. Currently, Green Tech has a staff of eight with plans to expand to 24 employees when the facility is fully operational. Phase II of the project is scheduled to open in Spring 2009 and includes a green technology incubator, a natural area with trails and wildlife feeding stations, and an environmental education center to instill the importance of protecting the environment in the community's youth.

Green Tech Recycling is also helping other cities to develop revenue-based, brownfields deconstruction projects, to reduce overall project costs and keep valuable materials out of the nation's landfills.

More information on Construction and Demolition materials and brownfields can be obtained at: http://www.epa.gov/brownfields/tools/tti_assess_cleanup.htm#construction or by contacting the EPA Office of Brownfields and Land Revitalization (OBLR) at (202) 566-2777.

The completed Material Recycling Facility (MRF) at Green Tech.

Tips for Value-added Deconstruction at your Brownfields Project

- Hire an experienced consultant to oversee your project; a qualified consultant can save a community valuable time and money.
- Ensure Requests for Proposals (RFPs) specify deconstruction rather than demolition, and include provisions for recycling and "rebates" for reusable materials.
- Hire an experienced deconstruction company—preferably a local one to support the local economy.
- Conduct an audit of building materials and attach a value to each material. Track audited materials to ensure that all materials are accounted for and that proper value is received.

Construction and Demolition Debris

Construction and demolition (C&D) debris is produced during new construction, renovation, and demolition of buildings and structures. C&D debris includes bricks, concrete, masonry, soil, rocks, lumber, paving materials, shingles, glass, plastics, aluminum (including siding), steel, drywall, insulation, asphalt roofing materials, electrical materials, plumbing fixtures, vinyl siding, corrugated cardboard, and tree stumps.

C&D materials can be recovered through reuse and recycling. In order for materials to be reusable, contractors generally must remove them intact (e.g., windows and frames, plumbing fixtures, floor and ceiling tiles) or in large pieces (e.g., drywall, lumber). In order to be recyclable, materials must be separated from contaminants (e.g., trash, nails, and broken glass).

The EPA Brownfields Program provides grants to fund environmental assessment, cleanup, and job training activities. The Program is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields.